The Tongue as Culprit
Increasing vowel clarity and improving legato through releasing unnecessary tongue tension

What in the world was God thinking when she designed the tongue? Why dedicate the delicate motor activity of articulation and vowel formation to a muscle primarily suited for the gross motor activity of pushing food down? Singers and other voice users have been suffering ever since.

The primary function of the tongue is to assist in transporting food to our stomach, to keep us alive. Asking the tongue to perform the fine motor activity of articulation is akin to using a forklift when you need a pair of tweezers. Nonetheless, we have no alternative, so we had better learn to tame this muscle.

The tongue is a major player in the articulation of consonants, but it is equally crucial for vowel formation, particularly in singing, where vowels are sustained much longer than in speech. A stiff or retracted tongue adversely affects all aspects of tone formation. Tension causes the tongue to move jerkily from vowel to vowel, impeding the formation of a *vowel legato*, that is, the smooth, efficient progression from one vowel to the next. Tongue tension also impedes the ability to create pitch legato, that is, the seamless transition from one pitch to another. This, in turn, adversely affects intonation and the creation of a fully resonant sound. This tension also causes consonants to separate—rather than connect—the vowels. Unfortunately, such is the nature and location of the tongue that often neither student nor teacher is aware of this inhibiting tension.

This article discusses my approach to eliminating tongue tension in singing. It describes the optimal use of the tongue in the formation of consonants and vowels, and presents exercises I use to help students eliminate tongue tension.

Sources of tongue tension

For clarity's sake, the tongue can be divided into three sections: tip, middle, and back or base. With the possible occasional exception of the American /ɪ/, as discussed below, the back of the tongue should *always* be relaxed. Since this area of the tongue is not visible, the teacher must rely on her ears and the student on developing the necessary sensory appreciation to determine whether such tension is present. The presence of the tip of the tongue just behind the lower front teeth is no guarantee that the base of the tongue is relaxed, but one indication of tension at the base is a groove or dip on the surface of the tongue. However, some singers are so talented (read: sneaky) that they are able to tense the base of the tongue with no visible sign.

The tip of the tongue is used for numerous consonants, namely /t, d, r, tʃ, dʒ, n, l, s, z, ʃ, and ʒ/. The tip of the tongue either touches the upper gum ridge for these consonants or approaches the gum ridge but does not touch it. In this consonant group, the tongue tip is closest to the upper front teeth for /t and d/, and farthest away for /ʃ and ʒ/, although the difference should be minimal. With the exception of /θ, ð, and the rolled or flipped r/, all remaining consonants, namely /p, b, k, g, m, ŋ, f, and v/, should be formed with the tongue resting behind the bottom front teeth, as is the case for vowels. The /θ and ð / are formed with the tongue between the teeth.

The tongue position for /r/ will strongly color the pronunciation of the text and is arguably the consonant that inspires the most disagreement on how to sing texts by American authors. In classical vocal technique, most singers will choose to very briefly flip the initial /r/ of *run* and the medial /r/ of *mirror* with the tip of the tongue on or close to the gum ridge, slightly behind the /z/ position, rather than retract the base of the tongue. The final /r/ in *mirror* is generally sung as the vowel /ɚ/, with or without a brief flip of the tip of the tongue at the very end. But there are exceptions for purposes of regionalism or style, in which a strong American /ɝ/ is desirable, such as in the song "Charlie Rutlage" by Charles Ives.

During vowel phonation, the tip of the tongue should stay behind the bottom front teeth at all times. It should not press on the teeth, but neither need it retract or lift away from them. The base of the tongue, as mentioned before, should remain relaxed. It is the middle of the tongue—and the middle of the tongue only—that creates the differentiation between the vowels /a, ɛ, e, and i/. It is in the lowest position for /a/ and rises gradually, attaining its highest position with /i/. Neither the tip nor the base of the tongue is needed to progress from one of these vowels to another, nor need there be any mouth or jaw movement. If the jaw is released without an exaggerated opening of the mouth, both extremes of this vowel progression—/a/ and /i/—can be produced with only incremental movement of the middle of the tongue. Only if the mouth is opened too wide will the opening need to be reduced for /i/.

For the vowels /a, ɥ, o, and u/ the tongue should remain in the /a/ position. That is, even if the tongue is slightly affected by the rounding of the cheeks to create /ɥ, o, and u/, there should be no *deliberate* change of tongue position, and attention should be paid to maintaining the connection between the tip of the tongue and the bottom front teeth, as many singers tend to retract the tongue for /u/. The rounding from /a/ through /u/ should also occur without a reduction in the space between the molars. This can be achieved by placing the knuckles of one hand on the cheek between the molars while forming the /a/ and maintaining the existing space while rounding the lips and cheeks forwards. In other words: no chewing.

Whereas the Italian term *legato*—which may be translated as *connected, joined*, or *bound*—is generally used in reference to pitch connection, it applies equally well to vowel transitions. When the tongue is tense, it is impossible to transition smoothly from one vowel to another,

and the addition of consonants will make this lack of vowel legato only more apparent. Other aspects of singing will also be adversely affected by tongue tension, including pitch legato, intonation, and the ability to easily access the higher register.
In order for the tongue to move smoothly and incrementally from vowel to vowel, the base of the tongue must be relaxed, and the singer must be able to isolate exactly what is necessary to transition from one vowel to another, whether it is a movement of the middle of the tongue, or no tongue movement at all.

Many singers would be quite happy singing on vowels alone, and a number of renowned composers, including Ravel, Stravinsky, Rachmaninoff, and Fauré, have obliged by writing vocalises without any text at all, even leaving the choice of vowels up to the singer. But, realistically, most repertoire does involve language, and language includes consonants, although the vowel-to-consonant ratio varies considerably depending on the language (cf. Italian: *dolore* with German: *Schmerz*) A common problem among singers is the immediate reduction in vocal quality as soon as consonants are added. This is due either to improper formation of the consonant in question or, more commonly, to the tendency of the consonant to adversely affect the vowel on either side of it. Either the singer anticipates the consonant, thereby distorting the *preceding* vowel, or fails to return to the correct vowel *after* the consonant. For example, on the word *alone*, the singer may retract the base of the tongue as the tip approaches the gum ridge for /l/, thereby distorting the /a/. Or the singer may fail to return the tongue to the correct, relaxed /o/ position after forming the /l/.

The singer must be trained to maintain the purity and integrity of the vowels regardless of the consonants, and to treat consonants as *connectors* rather than *disconnectors*. The correct and relaxed formation of the vowels and the smooth and efficient transition from one to another must become so ingrained that the inclusion of the consonants can contribute to the vocal quality and the expression. One thing that excellent singers all have in common is that they sing intelligibly without sacrificing the legato line. Or, conversely, they produce a seamless legato line without sacrificing intelligibility and textual expression.

I have developed the following series of exercises to help eliminate tongue tension and to create vowel legato with and without consonants. The initial exercises deal with chronic tension and with specific circumstances in which tongue tension often arises. These are followed by a set of progressive exercises for approaching textual phrases and sentences.

Eliminating chronic tension
With some singers, there is a low level of tension at the base of the tongue so constant that they are unaware of it. This is often true of a chronic condition: habitual behavior feels “normal,” and its presence goes unnoticed. Therefore, the singer’s first step is to differentiate between the habitually tense tongue and a different, unfamiliar, relaxed tongue. As in other areas of voice instruction—as well as with instrumental instruction and sports coaching—the initial introduction to something unfamiliar may well feel “weird,” “awkward,” even “wrong.” This is because whatever is habitual feels “right,” regardless of whether it truly is the correct,

efficient approach. Whether we are attempting to improve a backhand stroke in tennis, a bow grip for the violin, or vowel formation in singing, the key is to practice this strange, new approach until it becomes the new habit. How long this takes cannot be predicted as there are many factors involved, including sensory awareness, motivation, and resistance to change.

Since, in my experience, tongue tension involves the retraction of the tongue into the pharynx, the first exercise involves exaggerating the forward movement of the tongue by sticking it out of the mouth and panting like a dog. Because some singers are very sneaky and can still tighten the base of the tongue while leaving the tip against the bottom teeth, it is important to actually project the tongue outside of the mouth, letting it hang over the bottom lip.
The second exercise is to "babble" by quickly projecting and withdrawing the tongue, contacting the upper lip in both directions. In this exercise, the singer should vary the pitch constantly, in effect executing glissandi while babbling. In general, whenever I transition from a nonvoiced exercise to a voiced exercise, I like to use glissandi, since singers tend to tighten more on sustained pitches. Glissandi are also preferable to specific pitches because the singer needn't think about performing "correct notes."

Two more exercises are helpful in eliminating chronic tension, *if* the singer can do them easily. (If not, they are counterproductive.) These are the tongue trill, or rolled /r/ as in Spanish or Italian, and the lip trill. Both should be performed with as little excess air as possible and, as above, on glissandi.

Eliminating vowel-specific tension

While many singers choose /a/ above other vowels to vocalise because of a perceived ease in the higher register, the /a/ is also the vowel subject to the most tongue retraction and tension due to the lack of definition provided either by a higher tongue position (/i/) or lip and cheek rounding (/u/).

Further research needs to be conducted, in my opinion, on the tongue position for different vowels. Although illustrations generally show the back of the tongue much closer to the pharyngeal wall for /a/ and /u/ than for /i/, I am uneasy about the accuracy of these illustrations. Many singers do, indeed, retract the tongue on /a/ and /u/ in search of a "darker" or "fuller" sound. Since there is no audio component to these illustrations, however, it is impossible to tell the quality of the vowels in question, nor the abilities of the singers. My hypothesis (hitherto untested) is that (1) retracting the tongue for these vowels is undesirable, as it creates a greater contrast between vowels and impedes easy access to the higher register, and (2) if the back of the tongue is, indeed, necessarily closer to the pharyngeal wall for these vowels, this is caused by a secondary movement related to the lowering of the middle of the tongue, rather than an actual movement of the back of the tongue. (In other words, if you press down on the middle of a piece of play dough, the ends will spread out.) Little research has been conducted on the tongue and the vocal tract but, hopefully, future research will shed more light on this topic. For now, what should be noted is that, whether or not the back of the

tongue is in fact closer to the pharyngeal wall on /a/ and /u/ than on /i/, it should not *feel* closer; the singer should not experience any sensation of narrowing in the pharynx.

When a singer's /a/ can be described as overly "dark" or "plummy," or when we can observe a dip in the tongue surface, or when the /a/ tends to be sung under pitch while other vowels are in tune, the cause may be tongue tension. If this tension is vowel-specific, and not chronic as described above, the solution is first to find a vowel or other sound performed without tension. /ŋ/ is often a good starting point, providing, of course, that the tongue falls forward from its contact on the hard palate rather than being pulled backwards. Have the student sing / ŋ ŋ ŋ a a a ŋ ŋ ŋ a aa / on one pitch, using the mirror to check that there is no dip in the tongue surface on /a/. This can be followed by the progression / ŋ ŋ ŋ i i i a a a /, and then /i i i ɛ ɛ ɛ a aaa /.
Another approach to resolving the tense /a/ is to stick out the tongue so that it just hangs over the bottom lip. Have the student sing /h ˌ/ on arbitrary, short pitches, or on a 1-3-5-3-1 triad with a rest between each note. Ensure that the tongue does not retract during inhalation. Use considerable aspiration on the /h/ and don't aspire to an aesthetically pleasing vowel. Gradually, you can substitute /i/, /ɛ/, and /a/ for /ˌ/, at first maintaining the rests and the projecting tongue. The next steps are to perform the triad legato, without rests, and to place the tip of the tongue behind the bottom teeth. The order in which these steps are taken will depend entirely on what works best for the individual singer.

Some singers have the opposite problem, that is, the tongue is flat, forward, and relaxed on /a/ but gradually retracts and tightens for /ɛ/ and /i/, particularly as the pitch ascends. Some singers will even pull the tip of the tongue back from the bottom teeth.

In this case, begin an exercise on /a/ and "morph"—that is, transition smoothly—through /ɛ/ and /e/ to /i/. During the initial phase of these exercises, incorporating both vowel transitions and a series of pitch combinations tends to prove overwhelming. I therefore advocate either glissandi, in which the vowel transitions and frequency changes are *not* coordinated, or remaining on one pitch in an easy register. As the singer begins to master the incremental movements of the middle of the tongue without tensing the base, simple triads and scales can be incorporated. For instance: a five-note, descending scale with two vowels per note (e.g., /a ɛ/), followed by the same scale but alternating vowels each note:

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a ɛ   a ɛ   a ɛ   a ɛ   a ɛ
5     4     3     2     1

a     ɛ     a     ɛ     a
5     4     3     2     1
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or, similarly, the same two exercises on a 1-3-5-3-1 or 1-3-5-4-2-7-1 triad.
When the /ee/ is performed well in the middle of the voice but the tongue tightens as the pitch ascends, I have the student first sing a 1-5-1 glissando or portamento on /a/. I follow

this using the same pitches, but ascending on /a/ from 1 to 5, transitioning to /i/ while sustaining on 5 and maintaining /i/ while returning to 1:

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a a a     a i i     i
1    5    1
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There should be no sensation of increasing tension at the base of the tongue. Of course, at higher frequencies—particularly with female voices—the difference in vowel will be less discernable and the actual tongue movement smaller. At these frequencies, intelligibility is strongly contextual.

When tongue tension arises on /u/, two different paths can be taken. The first approach, similar to resolving tension on /i/, is to find a vowel in which the tongue is relaxed and then morph to the /u/ from there, either directly or via an intermediate vowel. As described above, the singer should begin with glissandi or exercises on one pitch before adding triads or scales. Sometimes the /a/ will serve as initial vowel, but often the problem in fact lies along the /a u/ transition, that is, the singer's tendency is to retract and tense the base of the tongue while moving from /a/ to /u/. If the singer can easily form the French or German /y/, this may prove a better initial vowel. Since the /y/ is a hybrid of /i/ tongue and /u/ lips, the singer need only lower the tongue to transition from /y/ to /u/, taking care not to tense the base during the descent. As before, triads and simple scales can be added once the correct tongue movement has become ingrained.

The alternate path is to choose a vowel in which the tongue is relaxed and then *preface* it with a /w/, which is simply a very brief /u/. The singer can improvise on either glissandi or arbitrary pitches, singing, for instance, /wi wi wi/ or /we we we/, and then gradually increase the duration of the /w/ so that it becomes a /u/. I have found that singers whose mother tongue is English are less inclined to tense the tongue for /w/ than for /u/. If, however, the mother tongue does not include /w/ (e.g., German or Dutch), this approach should be avoided.

Eliminating consonant-specific tension

By and large, specific consonants are less problematic than are vowels. Either the tongue is not involved (e.g., /b/, /v/, /m/) or the energy traveling through the tip of the tongue precludes tensing the base (e.g., /z/ /s/ /l/. (Of course, it is possible to tense the base of the tongue while performing these consonants, but there is less of a tendency to do so.) Consonants I've found to regularly result in tongue tension in and of themselves are the /g/ and /k/ and, occasionally, /ŋ/ due to the tendency to retract the tongue and contact the palate farther back than is necessary. When the /d/ is formed, tension may also result from excessive breath pressure or pressure of the tip of the tongue against the gum ridge.

A good exercise for solving this problem is one similar to that used by flutists when practicing quick, articulated passages. Alternate /d/ and /g/ as quickly as possible, allowing the pitch to change at will. The vowel should be a neutral /ˌ/.

The more pervasive problem, as described above, is the tendency of singers to *lose the integrity of the vowels upon introducing consonants*. The following is a sequential set of exercises that proceeds from pure vowels to complete text phrases. Since it is my philosophy to always begin from "what works well," none of these exercises is etched in stone. At any point it may be necessary to alter an exercise or add an intermediate step, depending on the needs of the particular singer.

Text example: *Geduld, wenn mich falsche Zungen stechen* from J.S. Bach *St. Matthew Passion*; tenor aria

1. Remove consonants from text fragments. *Geduld wenn* thus becomes /ɛ u ɛ/. *Wenn mich falsche* becomes /ɛ i a ɛ/. (Yes, for all you hair-splitters out there, the vowel at the end of *falsche* is slightly different from the vowel of *wenn*. This is exactly why one cannot learn to sing from a book.) Sing these vowel transitions on simple triads or scales, adding melismas when needed. For example, the vowels for *wenn mich falsche* can be sung as follows:

   1 3 5-3 1
   ɛ i a ɛ

   The stressed syllable—in this case, /a/ from *falsche*—generally takes the melisma.

2. Add the consonants. It is helpful to repeat the same pitch progression, with and without consonants. For instance, you might use the following triplet exercise:

   5-8-5 3-5-3 1
   ɛ u ɛ
   Ge- duld wenn

3. Sing the pitches and rhythms that Bach wrote, but remove the consonants. Once these vowels are being produced correctly…
4. Add the consonants.

This series of text exercises is simply a template. Other exercises must be developed as problems arise. One student of mine, a professional singer who is fluent in Italian but lacking in German skills, has a great deal of trouble differentiating between the initial /ʦ/ and /ʃt/. His formation of phonemes beginning with these sounds is not tense *in and of itself*, but his confusion and insecurity regarding the words *Zungen* and *stechen* results in tongue tension arising on the syllables *Zu* and *ste*. My solution was as follows:

1. Isolate the sounds /ts/ and /ʃt/ and combine with one single vowel, either the /u/ or /ɛ/. Sing /tsɛ ʃtɛ tsɛ/ and /tsu ʃtu tsu/ on two-note melismas on triads and descending five-note scales:

1-3	5-3	1
ze	ste	ze

5-4	3-2	1
zu	stu	zu

2. Using the same pitches and melismatic pattern, sing /tsu ʃtɛ tsu/.
3. Sing *Zungen stechen* on triads and descending five-note scales, applying the two-note melisma to the syllable /ʃtɛ/.

5	4	3-2	1
1	3	5-3	1
Zu-	ngen	ste-	chen

Conclusion

Unlike piano or violin studies, in which much of the technique is visible, very little can be seen with voice. The tongue is just one of the many areas of singing technique where a heightened sensory awareness of present habits is the key to improvement.

One of the cornerstones of my teaching philosophy is to *start with what works* and transition incrementally toward what doesn't. The singer needs a baseline from which to progress. Too much simultaneous information will cause sensory and cognitive overload and an inability to isolate the specific problem. For this reason, I recommend beginning with exercises that change *either* vowels *or* pitch, but not both simultaneously. The exception is the use of glissandi for students who have difficulty sustaining one pitch without tension. As a new, correct, habit becomes embedded, the complexity and range of the exercise can be increased.

The goal, as with any instrument, is for the technique to ultimately serve the musical expression. The better technical problems are resolved, the more the singer can focus on interpretation.